REMARKS

Claims 1 and 24-45 were rejected in the Office Action dated October 4, 2007. Claim 1 was rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. An appropriate amendment has been provided. This amendment to claim 1, as well as the amendment to claim 25, merely address formalities and do not alter the scope of the claims in response to the prior art of record. Claims 1, 24, 27, 39-40, and 42 were rejected under 35 U.S.C. 103(a) as allegedly unpatentable over U.S. Patent 4,125,443 ("Grant") in view of U.S. Patent 4,226,695 ("Matson"). Claim 25 was rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Grant and Matson and in further view of U.S. Patent 6,024,847 ("Rosenberg") and U.S. Patent 3,966,569 ("Reinhardt"). Claims 26, 29 and 32-33 were rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Grant and Matson in further view of U.S. Patent 6,818,105 ("Tojo"). Claim 28 was rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Grant and Matson in further view of U.S. Patent 4,064,032 ("Bouy"). Claims 30-31 were rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Grant, Matson, and Tojo in further view of Reinhardt. Claim 34 was rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Grant, Matson, and Tojo in further view of U.S. Patent 4,121,130 ("Grange"). Claims 35-37, 41, and 45 were rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Grant and Matson in further view of U.S. Patent 5,225,176 ("Greefkes"). Claim 38 was rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Grant and Matson in further view of Reinhardt. Claims 43 and 44 were rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Grant and Matson in further view of U.S. Patent 6,855,241 ("Palmer").

For at least the following reasons, the rejections of all pending claims should be withdrawn and the claims should be passed to issue. While this paper is believed to completely address all pending rejections, Applicants reserve the right to set forth other reasons supporting the patentability of the claims, including reasons supporting the separate patentability of dependent claims not explicitly addressed herein, in future papers. Further, for any instances in which the Examiner took Official Notice in the Office Action, Applicants expressly do not acquiesce to the taking of Official Notice, and respectfully requests that the Examiner provide an

affidavit to support the Official Notice taken in the next Office Action, as required by 37 CFR 1.104(d)(2) and MPEP § 2144.03.

I. Section 103 Rejections

A. Obviousness

Under the analysis required by *Graham v. John Deere*, 383 U.S. 1 (1966), the scope and content of the prior art must first be determined, followed by an assessment of the differences between the prior art and the claim at issue. In the present case, the scope and content of prior art, as evidenced by Grant in combination with Matson, does not include a suggested configuration that includes all of the recitations of either independent claim 1 or 42. The differences between the prior art and the claimed subject matter are significant because Applicant's claimed subject matter provides for a redundant and safe apparatus and method for the production of hazardous fluorine gas, while any combination of Grant and Matson could not offer either redundancy or safety.

In other words, "[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)." M.P.E.P. § 2143.03. Accord. M.P.E.P. § 706.02(j). Because Grant in combination with Matson fails to teach or suggest the subject matter of both claims 1 and 42, the rejections of claims 1 and 42, and the claims that depend therefrom, under 35 U.S.C. §103(a) based on Grant in view of Matson should be reconsidered and withdrawn.

B. Claim 1

Claim 1 recites in part:

> a plurality of individual fluorine generating cassettes;
>
> said individual fluorine generating cassettes being operably connected to a fluorine gas distribution system for the remote use and consumption of said fluorine gas;
>
> said fluorine generating cassettes being individually isolatable from said gas distribution system and removable from the apparatus for remote maintenance.

1. "individual fluorine generating cassettes being operably connected to a fluorine gas distribution system for the remote use and consumption of said fluorine gas"

The combination of Grant and Matson fails to teach or suggest "individual fluorine generating cassettes being operably connected to a fluorine gas distribution system for the remote use and consumption of said fluorine gas." The Examiner alleged that "Grant et al. discloses an apparatus for the generation/production of fluorine comprising ... a discharge pipe/gas distribution system (5)." (Office Action, page 3, citing Grant, col. 2 line 34 – col. 3 line 19.) While it is not disputed that Grant discloses an invention related to the electrolyte based production of fluorine (Grant, col. 1, lines 5-6), the Examiner has failed to make a distinction between the handling of the precursor electrolyte and the resulting fluorine that is produced. The element disclosed by Grant and labeled with reference number 5 is an electrolyte distribution pipe and not "a fluorine gas distribution system for the remote use and consumption of said fluorine gas." (Grant, col. 2, lines 42-45; Fig. 1.) Specifically, Grant discloses that "[t]he submersible pump 3 pumps the electrolyte through a discharge pipe 5 to a heat exchanger 6 which may be air or water cooled." (Id.) Moreover, the entire disclosure of Grant relates to the processing and handling of the electrolyte while it remains silent on the processing or distribution of any resulting fluorine. In fact, the only mention of the resulting fluorine refers to a third party product that is admittedly "not shown." (Grant, col. 3, lines 20-24.) Therefore, Grant fails to teach or suggest "individual fluorine generating cassettes being operably connected to a fluorine gas distribution system for the remote use and consumption of said fluorine gas." The combination of Matson does not overcome the deficiencies of Grant.

Accordingly, the rejection of Claim 1, as well as dependent claims 24-41 depending therefrom, should be withdrawn for at least this reason.

2. "fluorine generating cassettes being individually isolatable from said gas distribution system"

The combination of Grant and Matson fails to teach or suggest "fluorine generating cassettes being individually isolatable from said gas distribution system." The Examiner alleged

that "Grant et al. discloses an apparatus for the generation/production of fluorine comprising individual electrolytic cells ... wherein each cell is isolatable through flow control valves (9)." (Office Action, page 3, citing Grant, col. 2 line 34 – col. 3 line 19.) Specifically, Grant discloses that "[t]he electrolyte leaving the monitor 7 passes into electrolytic cells 8 which are connected in parallel between the points 15 and 16 ...through flow control valves 9." (Grant, col. 2 line 65 – col. 3 line 2; Fig. 1.) Additionally, Grant explains that "[w]ith several cells connected in parallel the flow into each cell is readily controlled so that the electrolyte flow is evenly distributed between the cells by adjustment of valve 9, associated with each cell." (Grant, col. 3 lines 49-52; Fig. 1.) However, neither discussion of Grant's valve teaches or suggests "fluorine generating cassettes being individually isolatable from said gas distribution system." Grant's valves merely regulate the flow of the electrolyte precursor into the electrolytic cells and are completely unrelated to any "gas distribution system." Additionally, it is complete speculation that Grant's electrolytic cells can be isolated from any gas distribution system given that Grant is silent with respect to even the existence of any type of "gas distribution system." Therefore, Grant fails to teach or suggest "fluorine generating cassettes being individually isolatable from said gas distribution system." The combination of Matson does not overcome the deficiencies of Grant.

Accordingly, the rejection of Claim 1, as well as dependent claims 24-41 depending therefrom, should be withdrawn for at least this additional reason.

3. "fluorine generating cassettes being individually ... removable from the apparatus for remote maintenance"

The combination of Grant and Matson fails to teach or suggest "fluorine generating cassettes being individually ... removable from the apparatus for remote maintenance." The Examiner acknowledged that Grant does not teach or suggest the forgoing recitation, but alleged that "Matson discloses an electrochemical processing system wherein several cells may be connected in parallel or series so that one or more cells may be shut down periodically for replacement of electrodes." (Office Action, page 3.) However, as acknowledged by the Examiner's very own words Matson merely discloses "that one or more cells may be shut down

periodically for replacement of electrodes." (Matson, col. 8, lines 50-51.) At most, Matson discloses that electrodes may be replaced, which fails to teach or suggest "cassettes being individually ... removable from the apparatus for remote maintenance." Moreover, disclosing that a cell may be shut down does not teach or suggest "cassettes being individually removable." Therefore, Matson and Grant fail to teach or suggest "being individually ... removable from the apparatus for remote maintenance."

Accordingly, the rejection of Claim 1, as well as dependent claims 24-41 depending therefrom, should be withdrawn for at least this additional reason.

C. Claim 42

Claim 42 recites in part:

> providing a plurality of fluorine generating cassettes operably connected to a fluorine gas distribution system for the remote use and consumption of the fluorine;
>
> isolating any individual fluorine generating cassettes from the fluorine gas distribution system and from each other; and
>
> disconnecting and removing the isolated fluorine generating cassette from the apparatus without interruption of supply of fluorine from remaining fluorine generating cassettes.

While claim 42 recites a method rather than an apparatus, it is allowable over the combination of Grant and Matson for largely the reasons presented above with respect to claim 1. The following summarizes the remarks presented above as applied to the recitations of claim 42. Specifically, Grant fails to teach or suggest "providing a plurality of fluorine generating cassettes operably connected to a fluorine gas distribution system" at least because Grant does not disclose "a fluorine gas distribution system." Grant fails to teach or suggest "isolating any individual fluorine generating cassettes from the fluorine gas distribution system and from each other" at least because Grant's valve merely regulates the input on the precursor electrolyte into the electrolytic cells. Matson fails to teach or suggest "removing the isolated fluorine generating cassette from the apparatus without interruption of supply of fluorine" at least because Matson merely discloses shutting down a cell for replacement of an electrode. Therefore, the combination of Grant and Matson fails to teach or suggest each of the recitations of Claim 42.

Accordingly, the rejection of Claim 42, as well as dependent claims 43-45 depending therefrom, should be withdrawn for at least this reason.

D. Dependent Claims

All dependent claims depend either directly or indirectly from one of claims 1 or 42. Therefore, claims 24-41 and 43-45 are in condition for allowance at least because they are dependent from one of the independent claims 1 or 42. Nevertheless, these dependent claims also recite independently patentable subject matter as will be discussed with respect to certain exemplary claims below.

1. Claim 25

For example, dependent claim 25 recites in part "wherein said valve mechanism includes a double isolation valve having a space therebetween, said space being connectable to an extraction and scrubbing system." The Examiner has rejected this claim on the basis of Grant and Matson as discussed above, and further in view of Rosenberg and also in view of Reinhardt. However, the combination of Rosenberg and Reinhardt with Grant and Matson fails to teach or suggest the foregoing recitation.

Rosenberg is cited on the basis of the isolation valves 24. (Rosenberg, Fig. 4.) However, the isolation valves, 24, as shown in Rosenberg do not appear to be double isolating valves. (Id.) At most, the valves close off the receiver intake port, 22, and blower, 23, at the lower end and also the receiver return port, 29, at the upper end to enable the gettering unit located between the two valves to be removed. (Id.) However, it would not appear that there is any particular need for the spent gettering unit to be isolated as such, since it does not appear to contain any especially hazardous materials. Furthermore, there is no supporting text in the passage relevant to Figure 4 as to the flow system being isolated and the gettering unit also being individually isolated. (Rosenberg, col. 10, lines 43-65.) In particular, there is no supporting description of any space in the isolation valve being connected to an extraction and scrubbing system to deal

with any hazardous materials which may be vented when the gettering unit is detached from the system. (Id.)

Reinhardt is cited because it shows "a wet scrubber in order to remove dust accompanying the gas." (Office Action, page 6.) However, claim 25 does not recite a wet scrubber utilizing water, such as shown in Reinhardt. Moreover, there is no dust accompanying the fluorine gas generated by the fluorine generating cassette. The sole purpose of the extraction and scrubbing system associated with the double isolation valves of claim 25 is to remove any residual fluorine which may be present from entering the ambient atmosphere and causing a hazard. Accordingly, Reinhardt does not teach or suggest "an extraction and scrubbing system" as recited in claim 25.

Thus, Rosenberg is virtually silent on the arrangement as claimed in the present invention and the additional apparatus described in Reinhardt appears to be singularly inappropriate to claim 25 of the present invention. In view of the above, the combination of Grant, Matson, Rosenberg and Reinhardt does not render claim 25 obvious.

2. Claim 26

In further example, claim 26 recites in part "wherein the fluorine generating cassettes are installable within a common apparatus main enclosure." Claim 26 was rejected as being obvious over Grant and Matson in view of Tojo. Specifically, the Examiner alleged that Tojo "discloses an apparatus comprising an electrolytic cell 2, with a cabinet/enclosure 1 in order to control the internal atmosphere of the cell." (Office Action, page 6.) At most, Tojo shows a single fluorine generating cell, 2, within an atmosphere controllable cabinet,1, (Tojo, Figure 1; col. 6, lines 1-2.) However, claim 26 relates "the fluorine generating cassettes are installable within a common apparatus." Installing all of the fluorine generating cassettes in a single common enclosure is significantly different from Tojo's disclosure of a single fluorine generating cell in an enclosure.

Accordingly, the combination of Grant, Matson, and Tojo fails to teach or suggest "wherein the fluorine generating cassettes are installable within a common apparatus main enclosure."

3. Claim 34

As another example, claim 34 recites in part "wherein said cathode connection is at 0 volts relative to earth." The Examiner cited to Gange because it shows a cathode having a connection at zero volts relative to ground. However, the cathode of the present invention is a cathode of an electrolytic cell for producing fluorine gas, whereas the cathode shown in Gange is a cathode structure for an electron gun which would not appear to be particularly relevant to the technology of the present invention.

Accordingly, the combination of Grant, Matson, and Gange fails to teach or suggest "wherein said cathode connection is at 0 volts relative to earth."

4. Claim 35

Further, claim 35 recites in part "at least one fluorine buffer cassette connected in a fluorine line downstream of said at least one fluorine purification cassette." The Examiner cited to Grant and Matson in view of Greefkes in alleging that "it would have been obvious ... to use the buffer vessel and purification unit in Greefkes in the apparatus of modified Grant in order to clean the waste gas." (Office Action, page 9.) The purification cassette of the present invention is essentially an apparatus unit which removes particulate matter from the generated fluorine gas, the particulate matter being particles of electrolyte carried out of the generating cell by the generated fluorine gas. Greefkes shows a purification unit 10 which is downstream of a buffer vessel, 9. (Greefkes, Figure 1.) Accordingly, the buffer vessel, 9, of Greefkes is before the purification unit, 10, and is there to serve as a buffer unit in that it imparts a chemical effect to the water flowing into the purification unit, 10. In the present application, the purification unit, as stated above, removes particulate matter carried over from the electrolyte by the fluorine gas and is situated in the flow cycle **before** the buffer unit (in contrast to the disclosure by Greefkes). Moreover, the buffer unit may hold and store at a moderately elevated pressure a supply of fluorine gas should the fluorine generating cassette be stopped for a short period in its production cycle or to provide a fluorine supply at a constant pressure. Moreover, the buffer of Greefkes is not a buffer in the sense that it holds any gas whatsoever, but imparts chemical effects on water containing dissolved gas which flows through pipe, 8, to the buffer vessel, 9, the buffer vessel, 9,

being linked to a **water** purification unit, 10, (Greefkes, col. 5, lines 10-13). Thus, the purification and buffer units of Greefkes serve a completely different and distinct function from those of the present invention and are largely irrelevant.

Accordingly, the combination of Grant, Matson, and Greefkes fails to teach or suggest "at least one fluorine buffer cassette connected in a fluorine line downstream of said at least one fluorine purification cassette."

5. Claim 38

In further example, claim 38 recites in part "purging means to remove potentially reactive fluids from piping before fluorine is introduced thereinto." The Examiner cited to Grant and Matson in view of Reinhardt to allege that "it would have been obvious ... to use the drainage pipe in Reinhardt in the apparatus of modified Grant in order to remove filtrate." (Office Action, page 11.) At most, Reinhardt discloses drainage pipe 43 for the removal of filtrate. (Reinhardt, col. 3, lines 40-47.) However, claim 38 is concerned with purging potentially reactive gases from the fluorine gas distribution system to which the fluorine generating cassettes are ultimately connected, and , in this regard, requires purging with a "neutral" gas such as an inert gas or nitrogen, for example. However, it is not seen what possible relevance the drainage pipe, 43, for filtrate has in regard since there is no filtrate to be removed in the present invention and all that is being done is effectively purging or cleaning the fluorine gas distribution system so that no potentially reactive gases remain therein when fluorine is introduced.

Accordingly, the combination of Grant, Matson, and Reinhardt fails to teach or suggest "purging means to remove potentially reactive fluids from piping before fluorine is introduced thereinto."

6. Claim 43

Additionally, claim 43 recites in part "providing the fluorine generating cassettes with sufficient fluorine generating capacity such that a total demand for fluorine may be met by less than the number of fluorine generating cassettes within said apparatus." The Examiner cited Grant and Matson in view of Palmer in alleging that "it would have been obvious ... to change

the number of cells in Palmer in the method of modified Grant in order to match the changes in demand." (Office Action, page 12.) With respect to the recitation of claim 43, if there are three fluorine generating cassettes within the apparatus then the total demand of the plant to which they are connected must be able to be met by at least two of those fluorine generating cassettes should the third one be rendered inoperative for any reason. Thus, total demand of the plant to which the apparatus is connection would, in this case, be met by fluorine generating capacity of 66%. Palmer discloses that "as demand changes, other combinations of furnaces and cells can be started up, or turned off, to match the change in demand." (Palmer, col. 9, lines 23-43.) Additionally, "it is an advantage of the present invention that it is rapid and easy to scale-up production or to turn-down the capacity of the apparatus to meet any changes in demand, by simply starting up or turning off the correct number and type of units." (Id.) Accordingly, Palmer discloses an entirely different process from that of claim 43, which requires that total demand must be met by a number of fluorine cassettes less than the total number in the apparatus. Clearly, starting up or turning off apparatus units according to Palmer fails to teach or suggest the recitation of claim 43. Palmer merely states that the apparatus he describes can be turned up or scaled down to meet actual demand, which is not the same as what is claimed in claim 43.

Accordingly, the combination of Grant, Matson, and Palmer fails to teach or suggest "providing the fluorine generating cassettes with sufficient fluorine generating capacity such that a total demand for fluorine may be met by less than the number of fluorine generating cassettes within said apparatus."

CONCLUSION

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue. Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 18-0013, under Order No. 66221-0037 from which the undersigned is authorized to draw.

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